NORTH PENNSYLVANIA RAILROAD, LANDIS RIDGE TUNNEL
(Philadelphia & Reading Railroad, Perkasie Tunnel)
Pennsylvania Historic Railroad Bridges Recording Project
Beneath Landis Ridge and State Rt. 563
Perkasie
Bucks County
Pennsylvania

HAER No. PA-514

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
1849 C Street, NW
Washington, DC 20240

HAER
PA
9-PERK,
3-

HISTORIC AMERICAN ENGINEERING RECORD

NORTH PENNSYLVANIA RAILROAD, LANDIS RIDGE TUNNEL
(Philadelphia & Reading Railroad, Perkasie Tunnel)

HAER No. PA-514

Location:	Beneath Landis Ridge and State Rt. 563, Perkasie, Bucks County, Pennsylvania.
USGS Quadrangle:	Quakertown, Pennsylvania (7.5-minute series).
UTM Coordinates:	18/474755/4470345 (north portal) 18/475055/4469785 (south portal)
Dates of Construction:	1853-57.
Basis for Dating:	Secondary sources.
Date of Alteration:	1911.
Designer:	Edward Miller (Chief Engineer, North Pennsylvania Railroad).
Builder:	Thurlow, contractor.
Present Owner:	Norfolk Southern Railroad.
Present Use:	Railroad tunnel.
Structure Type:	Brick arch.
Significance:	This is one of few early American railroad tunnels that has not been altered to increase clearances. It retains its original south portal, and is unlined over most of its 2,142'-0" length.
Historian:	Justin M. Spivey, April 2001.
Project Information:	The Historic American Engineering Record (HAER) conducted the Pennsylvania Historic Railroad Bridges Recording Project during 1999 and 2000, under the direction of Eric N. DeLony, Chief. The project was supported by the Consolidated Rail Corporation (Conrail) and a grant from the Pennsylvania Historical and Museum Commission (PHMC). Justin M. Spivey, HAER engineer, researched and wrote the final reports. Preston M.

Thayer, historian, Fredericksburg, Virginia, conducted preliminary research under contract. Jet Lowe, HAER photographer, and Josepb E. B. Elliott, contract photographer, Sellersville, Pennsylvania, produced large-format photographs.

Description and History

The North Pennsylvania Railroad opened from Philadelphia to Gwynedd in 1855, and to Bethlehem in 1857, becoming an important link between the Lehigh River valley and the lower Delaware. Construction of a tunnel beneath Landis Ridge was the slowest operation, started in 1853 and completed just before the Bethlebem extension opened.[1] The tunnel currently takes its name from nearby Perkasie, but that town did not exist in 1857, so it was first called the Landis Ridge or Sellersville Tunnel.[2] The name Perkasie Tunnel seems to have been adopted subsequent to acquisition by the Philadelphia & Reading Railroad (P&R). P&R first acquired the North Penn in 1879 and held it intermittently through most of the twentieth century.[3] Tbe line became part of the Conrail system as part of a major reorganization in 1976, and currently belongs to the Norfolk Southern Railroad.

The Landis Ridge Tunnel, while not the first among American railroad tunnels, was relatively long for its time at 2,150'-0" to 2,170'-0" (accounts vary). Its construction precedes the publication of many American engineering periodicals, leaving few details of the process. A contemporary text on tunneling by Henry S. Drinker included a short description of the tunnel, and less technical accounts appeared in a local newspaper, the Bucks County *Intelligencer.*[4] Annual reports of the railroad's Chief Engineer, Edward Miller, provide further general information. According to Miller, the section including the tunnel was "the most costly on the road" and was plagued with difficulties. The first contractor abandoned the project, and an outbreak of cholera interrupted bis replacement's more promising performance.[5] Drinker's description includes costs "under Thurlow's contract," presumably the one who completed the tunnel in early 1857.

The Landis Ridge Tunnel's original appearance is evident in its south portal, which remains intact. The face wall consists of smooth-faced asblar masonry with a segmental arch over the opening, which provides a clearance envelope of 28'-0" by 21'-0". Just inside tbe portal, the smooth ashlar face wall keys into rough-faced ashlar walls consisting of smaller blocks with a rubble backing. A brick arch roof, at least four rows thick, has been partially covered witb concrete parging. The wooden centering used to construct the arch was depicted in Drinker's book (see Figure 1). This lining extends for a length of 121'-0" into the bore, where the rock is capable of supporting itself. Another 107'-0" stretch of lining appears at the north end, although this has been cut back from its original length. An Interstate Commerce Commission valuation survey in 1918 revealed three vertical sbafts, an "air shaft" 1,344'-0" from the south portal and two smaller "test shafts" at 282'-0" and 1,743'-0".[6] The middle shaft provided two additional headings during construction, while the outer sbafts were probably used to explore subsurface conditions or keep the tunnel in alignment.

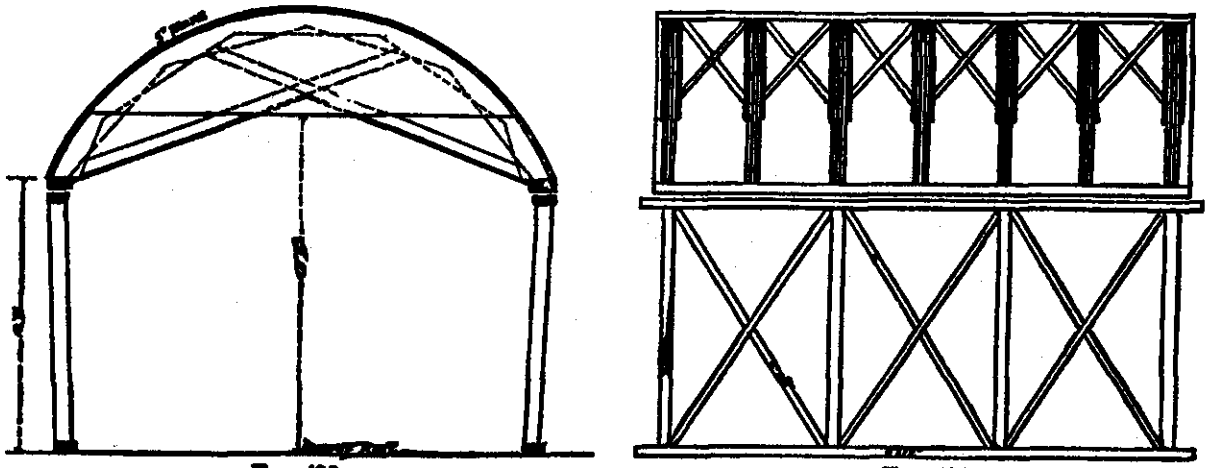

FIG. 490. FIG. 491.

CENTRING OF SELLERSVILLE TUNNEL.
(North Pennsylvania Railroad.) Scale, 10' = 1".

Figure 1. Arch centering used in construction of Landis Ridge (Sellersville) Tunnel. *Source:* Henry S. Drinker, *Tunneling, Explosive Compounds and Rock Drills* (New York: John Wiley & Sons, 1878), 549.

The tunnel beneath Landis Ridge is one of few early American railroad tunnels that has not been altered to increase clearances. Miller chose to construct most of the North Penn two tracks wide and install only one track at first. The Perkasie tunnel presently carries a single track centered in the bore, but historic photographs confirm that it once accommodated two.[7] Its lack of alteration is even more remarkable because it is the lone survivor among a number of tunnels planned in Miller's survey for the North Penn. Several tunnels were replaced with deep cuts during the original construction campaign. Although Miller proceeded with plans for a 500'-0" tunnel at Gwynedd, the roof was removed in 1930, making it a deep cut as well.[8] The Perkasie Tunnel, in contrast, has been altered only slightly. In April 1911, P&R removed a short section of roof at the north end and installed a new concrete portal.[9] This reduced the tunnel's length to its present 2,125'-0". The 1918 valuation survey found that the railroad had added five sections of concrete lining (totaling 253'-0" in length) and applied concrete parging over the original lining at the north end.[10]

Notes

1. Jay V. Hare, *History of the North Pennsylvania Railroad* (Philadelphia: Reading Co., 1944), 10 et passim, typescript in Paley Library, Temple Univ., Philadelphia, Pa.; see also "Opening of the North Penn R. R.," *The Pilot and Philadelphia & Reading Railway Men* 15, No. 9 (Sep. 1914): 278-79.

2. James 1. Moyer, letter to author, 30 Dec. 1999.

3. Jay V. Hare, *History of the Reading* (Philadelphia: ABC Duplicator Co., 1966), 102.

4. Henry S. Drinker, *Tunneling, Explosive Compounds and Rock Drills* (New York: John Wiley & Sons, 1878), 976-77; *Bucks County Intelligencer,* 13 and 20 June 1854, 25 Mar. 1856, 1 July 1856, and 6 Jan. 1857.

5. See 1854 annual report quoted in Hare, *History of the North Penn,* 6.

6. Interstate Commerce Commission, Bureau of Valuation, Engineering Field Notes, Philadelphia & Reading Railroad, Notebook No. 62, pp. 34-45 (2 Aug. 1918), in Box 138, Record Group 134, National Archives, College Park, Md.

7. Hare, *History of the North Penn,* 6; cf. photograph in Philadelphia & Reading Railroad scrapbook, p. 313, in Woolsten Collection, Railroad Museum of Pennsylvania, Pennsylvania Historical & Museum Commission, Strasburg, Pa.

8. Hare, *History of the North Penn,* 6.

9. Moyer, letter to author.

10. Interstate Commerce Commission, op. cit.

Acknowledgment

The author is grateful to James 1. Moyer for responding to a preliminary survey form.

Additional Source

1. Milepost 35.50, region/division/branch 100301, aperture card files, Consolidated Rail Corp., Philadelphia, Pa. [transferred to Norfolk Southern Railway Co., Atlanta, Ga.].